

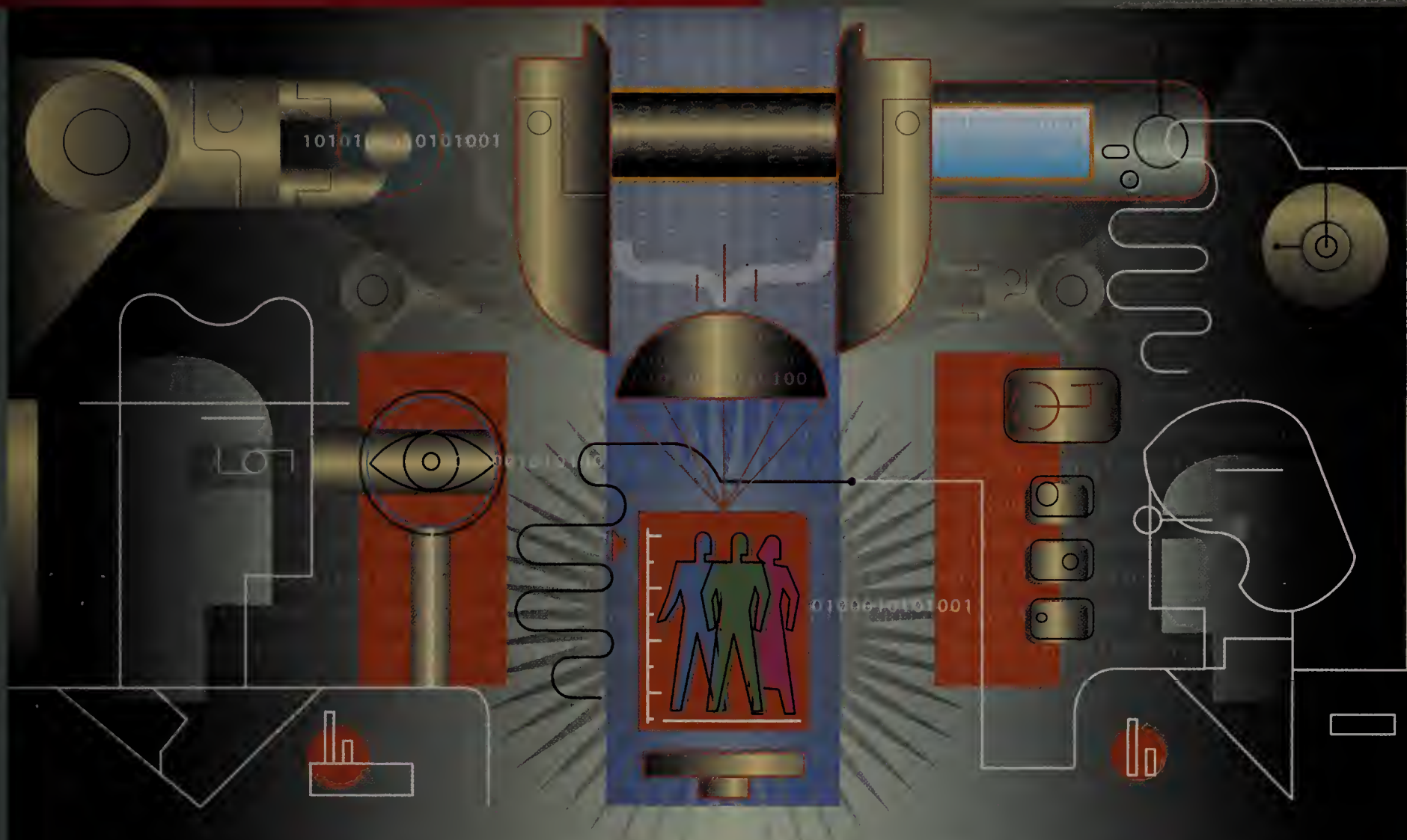
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BY STEPHANIE OVERBY

See how HP & NASCAR drive social media.
Powerful new connections across all forms of media.



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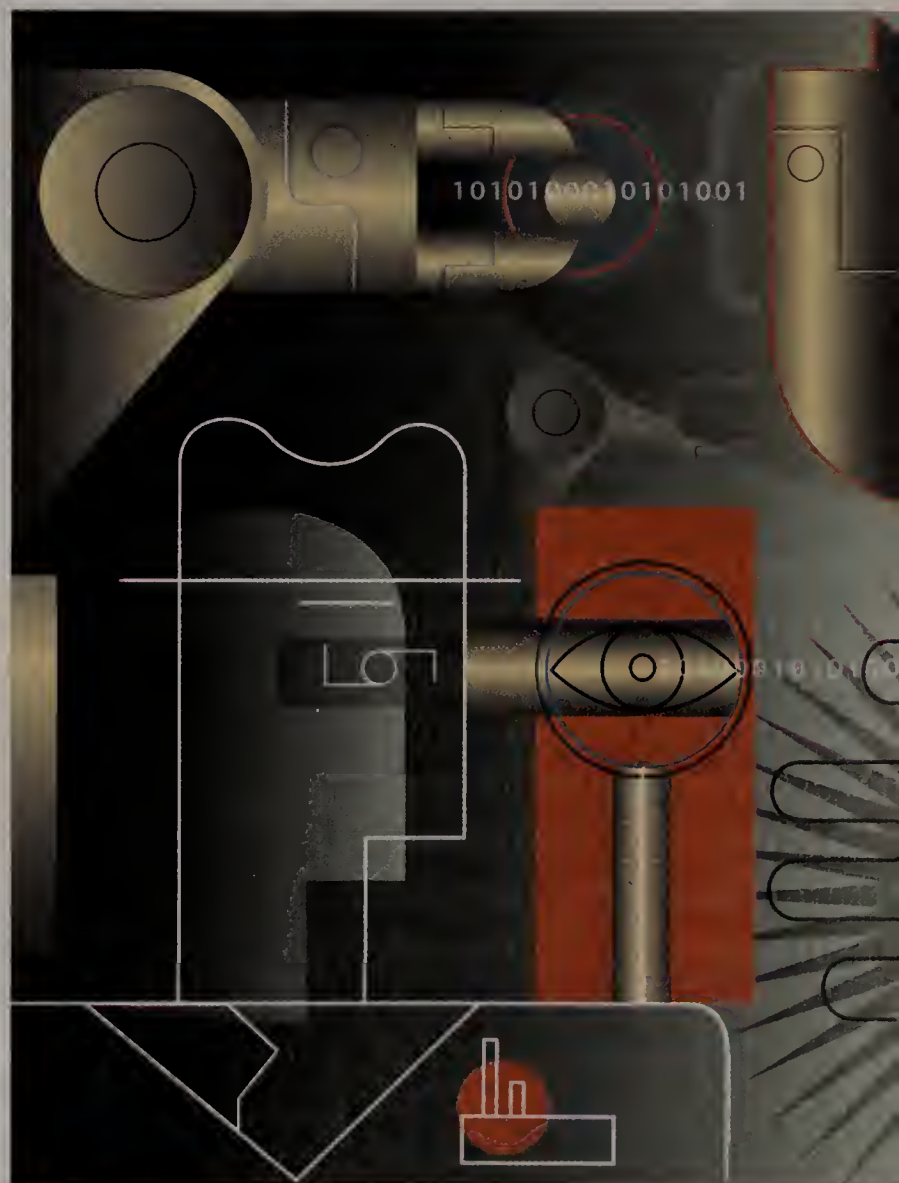


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Invasion of the Data Scientists 30

COVER STORY Leading HR departments are turning to 'talent analytics' for a wide range of staffing issues. CIOs are at the center of this data-driven transformation.

BY STEPHANIE OVERBY





FROM THE
EDITOR IN CHIEF

start

CHATTER

Analyzing Talent

When two of your best employees eat lunch together, does the company make more money as a result? When call center staffers take group breaks to socialize, do they complete calls more quickly afterward? When lunchroom tables are a bit more crowded, does overall productivity increase?

Welcome to the fascinating but nascent world of talent analytics, where the “yes” answers to all of those questions are based on science and real data. No guesswork need apply.

As you’ll learn in our cover story (“Invasion of the Data Scientists,” Page 30), there is an expanding array of business uses for talent analytics—and a crying need for CIOs to dive in and give HR executives a helping hand.

“HR is being held accountable to deliver business results. And the language of the business is analytics,” says General Motors’ Michael Arena, who leads the global talent group there. “A big piece is integration—ensuring the right systems are connected so we know where to draw the data from.”

That puts IT at the white-hot center of the data-driven HR efforts happening today at companies like Chiquita Brands, Coca-Cola Enterprises, Fairchild Semiconductor, GM, Praxair, Steelcase, and many others. They are crunching new sets of data drawn from SharePoint, ERP systems, social networks, email, workplace sensors and other sources. The often-surprising results provide fresh answers to all sorts of HR questions about new-hire screening, successful project staffing, call center efficiencies—and attrition predictions for top performers.

Our story also delves into the dark side of personal data-collecting, which skirts the boundaries of privacy. “The barrier at this point is not the technology,” says Ben Waber, author of *People Analytics* and CEO of Sociometric Solutions. “The challenge is that organizations are not used to looking at themselves this way.”

Waber notes that companies have assembled employee data for years, mostly for qualitative purposes. But these next-generation metrics “give us radically more powerful information,” he says.

CIOs especially can help their companies figure out what data matters most. “Everyone is thinking about big data and collecting all kinds of data to try to figure out how to create smarter people,” says Terry Sullivan, director of applied research at furniture-maker Steelcase. “CIOs can drive this effort.”

Maryfran Johnson, Editor in Chief, CIO Magazine & Events
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Digital Records Help Haiti

Although some U.S. healthcare providers have yet to see clear benefits from **electronic health records (EHR)**, one hospital in Haiti has. After the **devastating 2010 earthquake**, Haiti’s St. Boniface Hospital worked with EHR vendor Athenahealth to set up the country’s first spinal cord injury treatment center. The hospital didn’t face the **resistance to change** that stymies many upgrade efforts, and the EHR system saves lives by connecting St. Boniface with Boston University’s medical campus, where **doctors view X-rays** and collaborate on patient treatment. www.cio.com/article/737151

Outsourcing Deal Rescue

To rescue a **\$1.2 billion state IT outsourcing deal gone wrong**, Georgia CIO Calvin Rhodes halted work on a 2008 contract with IBM and AT&T and spent a year **rebuilding vendor relationships** and improving internal governance. The resulting transformation—and the lessons both sides learned during the time-out—has the project **back on track** for completion in 2014. www.cio.com/article/736673

The \$100 Billion Problem

Cybercrime may be costing the U.S. economy as much as **\$100 billion and 500,000 jobs** annually, says the Center for Strategic and International Studies, a Washington, D.C.-based think tank. Rather than rely on standard security survey data, the report (sponsored by security vendor McAfee) uses an **economic model** to evaluate data from the Commerce Department and other sources on **malicious cyberactivity, crime, intellectual property loss**, business downtime and lost trust. www.cio.com/article/736824

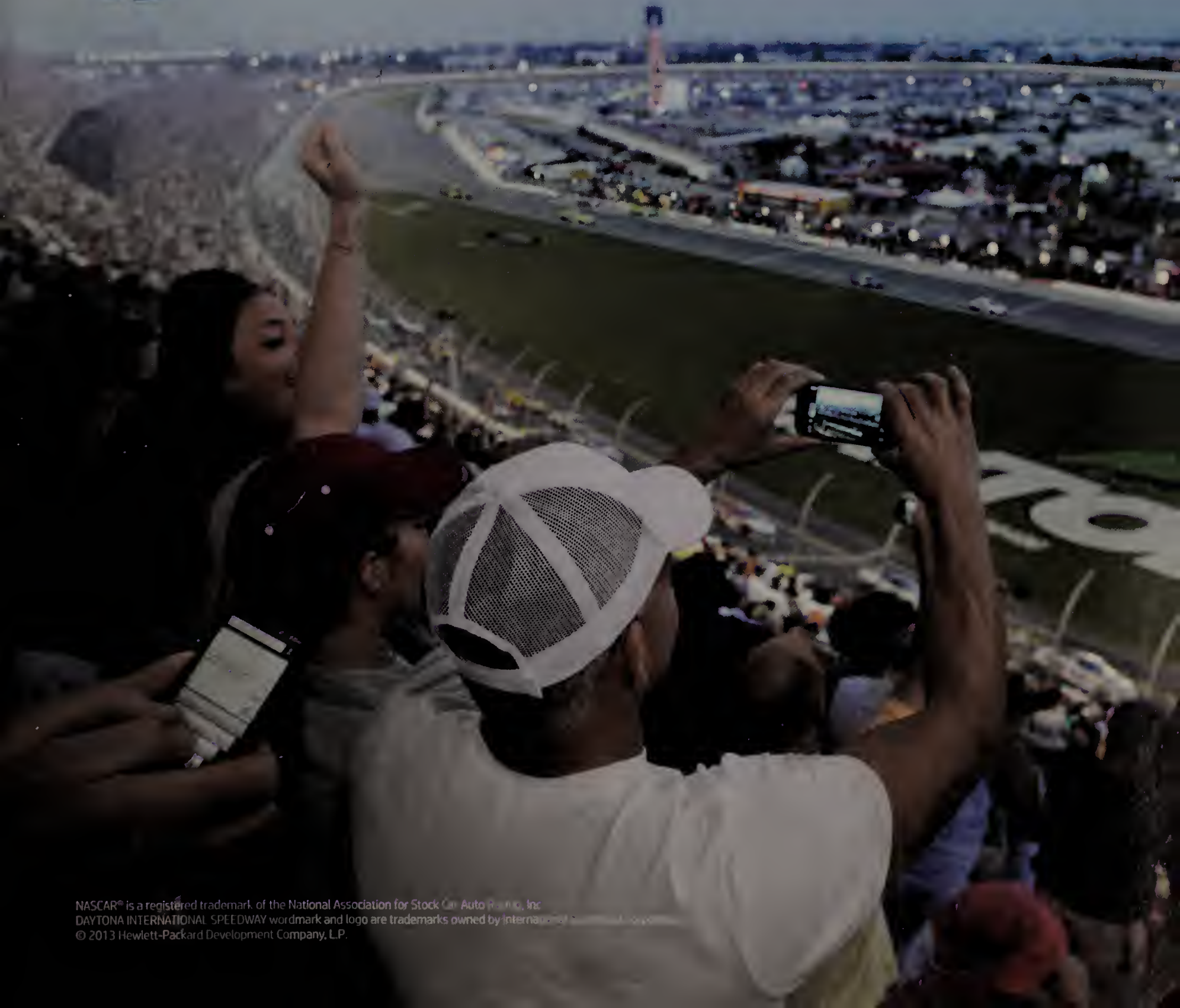
Compiled by Staff Writer Lauren Brousell.
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FROM THE PUBLISHER

CIO to CPO?

I hear a lot of conversations these days about whether the "I" in CIO still means "information" or if it really stands for some other "I" word. Innovation? Integration? Intelligence? While those are always entertaining discussions to have, I'm thinking about a different letter entirely: Who is the CPO at your organization? The "P" doesn't stand for procurement or privacy, but for policy or process.

As I talk with CIOs about where their businesses are heading and what they are doing to get there faster, we often end up discussing their investments in consumer-based or emerging technologies. Then the focus inevitably moves to policy and process. "If I am going to enable and promote [bring your own device]," one CIO told me, "I need to have a policy and process in place that employees must follow to ensure we are safe, secure and compliant." I hear virtually the same comments about cloud and social, too.

So who steps up to be the CPO in your organization? Who sets up these new policies and processes and then follows through to monitor and enforce them? Is it the legal department, or the chiefs of security, operations or finance? It certainly isn't the CMO. (Despite all the great press marketing execs are getting lately about their IT spending, I don't believe the "P" words are keeping them up at night.)

Seems to me this is one of those boring-but-important areas that could benefit from greater collaboration among the various stakeholders, including (wait for it...) IT vendors. That's right. As your technology suppliers are busy promoting new ways of doing business—and reveling in the creation of disruptive technologies—shouldn't they be sharing some of their own expertise and taking a proactive role in helping CIOs create and deploy policies and processes?

I'm all for fostering change and innovation within the enterprise, and the adoption of new technologies often leads to new ways of working together. But all that must be tempered with some respect for the standards and practices that made that organization a success in the first place.

What I hear expressed by many CIOs today is the feeling that the CPO role falls increasingly—and heavily—on their shoulders. Yet it really should be a collaborative effort that extends to the vendor community. Could such a partnership work? Would you welcome it? Write in and let me know what you think.

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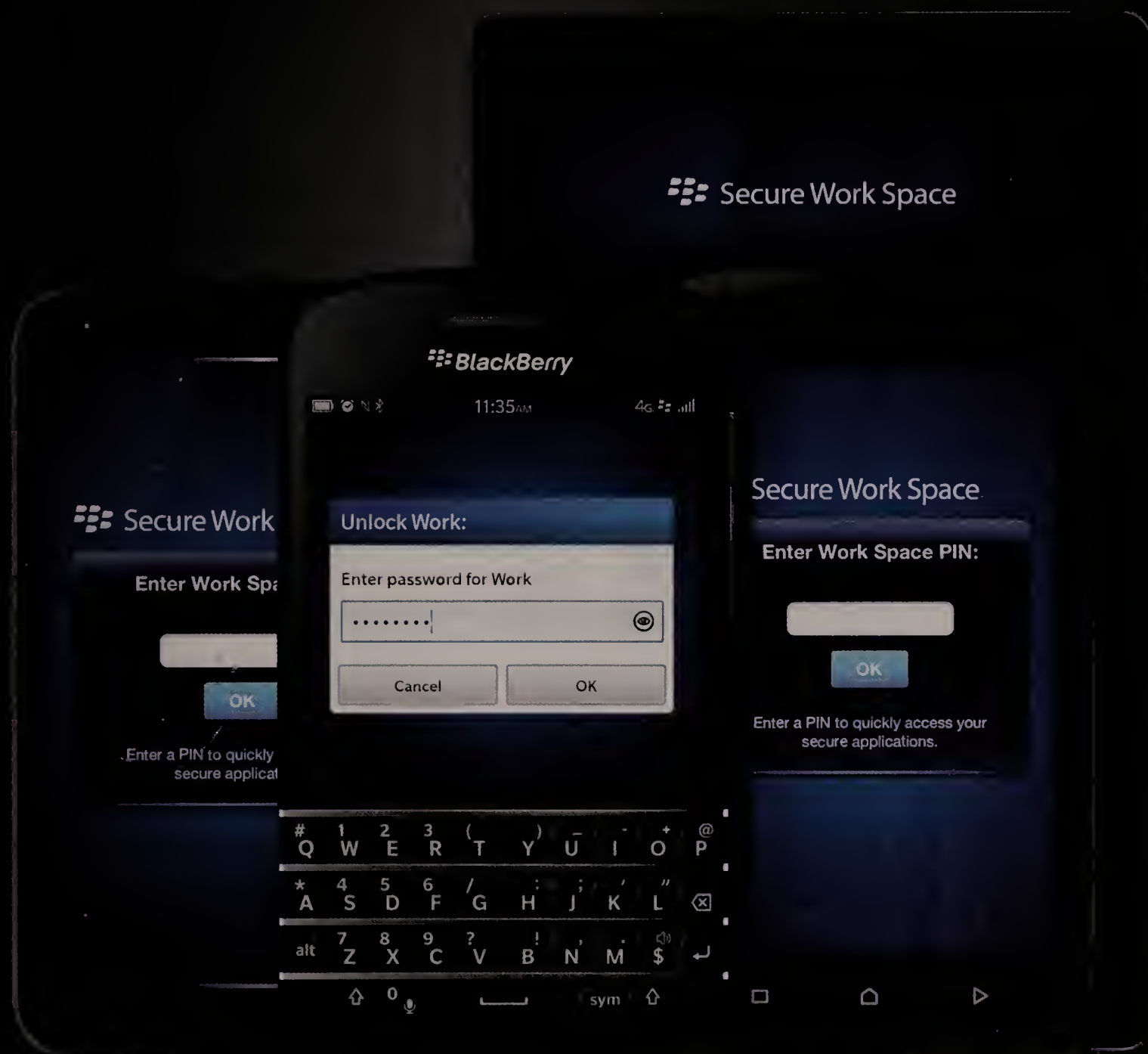
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numbers you need

Mentoring Works, Classes Don't

CIOs say most well-meaning efforts at IT leadership development aren't very successful **BY BRENDAN MCGOWAN**

The top two tiers of IT leadership—the CIO's direct reports and their direct reports—do many things well, such as vendor management and team building, according to a study by the CIO Executive Council. But when it comes to leadership development of the IT staff, the study says they're not achieving great results.

In a survey of 200 CIOs, only one leadership-development technique—mentoring or coaching—was rated as highly successful or successful by at least 50 percent of respondents. All others were rated as not successful or only somewhat successful by most respondents. Even mentoring and coaching was rated highly successful by only 14 percent of the CIOs.

MBA-like executive education classes were rated the least effective development technique. "Sending your employees off to a course and expecting them to be an expert and apply the lessons is not as valuable as taking your own time to mentor and grow someone," says Paul Brady, CIO of Arbella Insurance Group. "It's not easy—hence the desire

to ship employees off to an executive course."

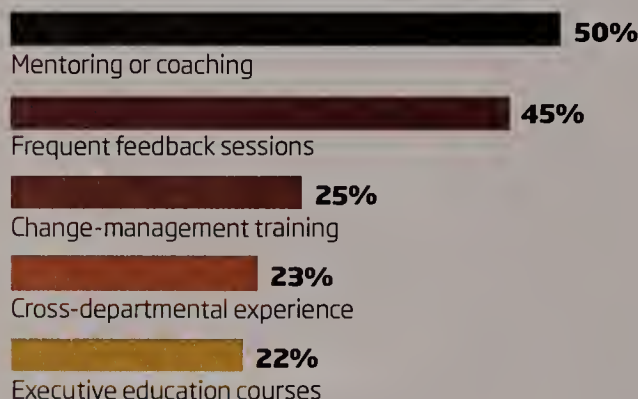
The survey identifies other areas ripe for improvement. Forty-two percent of the CIOs ranked their leadership team as not proficient at presenting "compelling visions of IT-enabled business opportunities." This indicates that CIOs don't generally view their top lieutenants as business innovators. In addition, 27 percent of the surveyed CIOs rated their leadership team as not proficient at embracing "external customer needs and experience."

Senior leadership teams were also judged to be relatively weak in their ability to develop their own people—30 percent of respondents rated their team as not proficient—even though nearly all CIOs viewed that capability as crucial to the organization. "We are not preparing people to lead. Today's CIO is better at managing up and across her organization than she is at developing her own team," says Bob Kantor, executive coach at Kantor Consulting Group.

Brendan McGowan is media relations and program coordinator at the CIO Executive Council. Contact him at bmcgowan@cio.com.

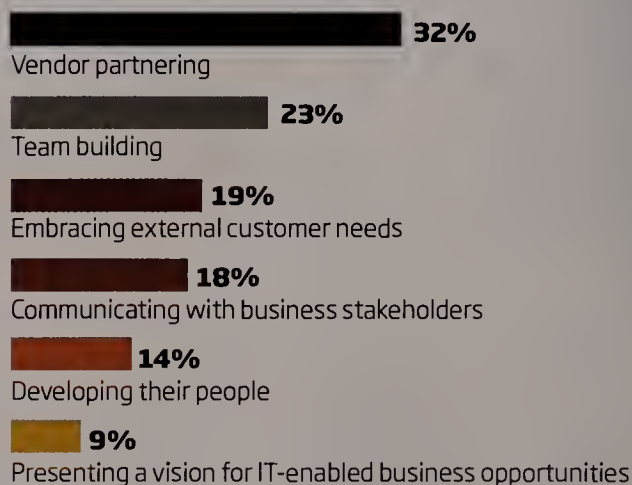
Some Techniques Disappoint

Which techniques are successful or highly successful for developing leadership capabilities?

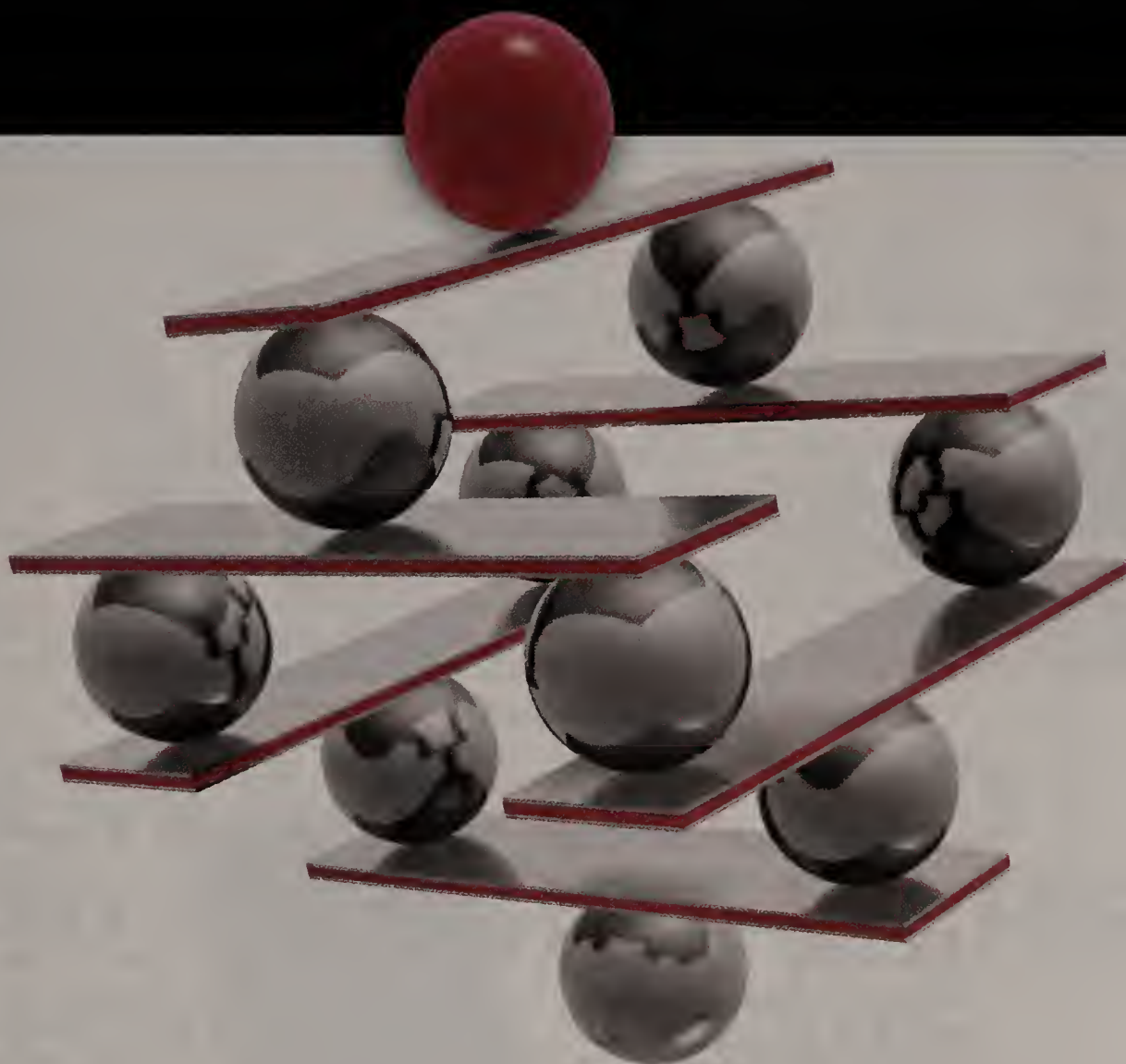


In Search of Excellence

CIOs rate their senior teams as highly proficient at these leadership capabilities:



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3 **Once your personal brand is in place, you have to work at maintaining it regularly.** Every interaction should leave people feeling like you were true to your brand statement.

—Rich Hein



For more tips, see: www.cio.com/article/733782



WORTH READING

BOOK People Analytics **By Ben Waber**

Can sensors and analytics deliver insights into how people work and collaborate? MIT Media Lab visiting scientist Ben Waber argues the case for bringing hard data to the soft skill of management. For CIOs thinking of making structural workplace changes to foster teamwork, this book is a good starting place. *FT Press, \$26.38*



quick FIX



How can I cultivate better teamwork between IT and the business?

ALWAYS train your people to collaborate and hold each other mutually accountable. When possible, hire coachable people instead of fierce individualists. In today's global economy, executives need to make swift decisions, and IT plays a key role in creating a culture of efficient, aligned execution. Think of the critical role IT plays in the Internet of Things, where it enables machine-to-machine alignment. To make similar "industrial Internet" successes possible, IT departments can't see themselves as separate, isolated units. That requires a new level of team-oriented thinking.

SOMETIMES your team must take risks to move forward. This requires IT leaders who see themselves as captains. Captains recognize the strengths and weaknesses of team members and plan around their abilities. When your department gets bogged down by rule-following and order-taking, your entire organization suffers. Let other company leaders know that IT wants to work beyond limiting boundaries so the business can stay ahead of the pack.

NEVER put all your managerial eggs in the basket of one superstar. While MVPs may achieve impressive things, they also hoard information until performance time. No single individual has the skill set to take projects from start to finish in today's complex environment. It's smarter to exchange ideas frequently and reward team results. This makes the speed of information sharing, and the role of the CIO in particular, even more important to the future of business.

Bruce Piasecki is the author of *Doing More With Teams* and founder of AHC Group, a management consultancy.

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VIEWPOINT


Gordon MacArthur

GLOBAL MANAGING DIRECTOR,
EMC TRUST SERVICES,
EMC ASSURED AVAILABILITY
SERVICES

MacArthur is an accomplished IT professional with extensive business continuity expertise and 25 years of experience in a variety of professional services management roles. He joined EMC after a highly accomplished, 11-year career at Comdisco Inc., where he was most recently Senior Vice President, Technology Services.

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Continuous Availability

Advocating Always-on Infrastructure

There is an increasing focus on a continuous availability approach to business resiliency. Gord MacArthur, global managing director, EMC Trust Services, explains the implications of this trend for users.

What are the disrupters currently causing the paradigm shift in information availability?

Many of the disrupters are traditional, such as compliance pressure and the need for an always-on infrastructure. Some of the new disrupters we're seeing include no forgiveness around downtime—not even for natural disasters like Hurricane Sandy. That, coupled with the challenges of lining up planned downtime for infrastructure upgrades, software upgrades, database extracts, etc., is making things very difficult for IT management.

What are the emerging technologies that business continuity managers should be discussing with their information and communications technology (ICT) teams?

It's now possible with off-the-shelf technologies to achieve a total continuous availability architecture over distance—we can now stretch traditional clusters, applications and databases over distance. The leading technology in that area is VPLEX, which allows you to have databases and applications running concurrently in two different locations completely active-active. This is a transformative approach, and because it's new, the knowledge needed to implement this kind of architecture is not always resident in all organizations—it is not necessarily intuitive. That's why our expertise in making this happen for customers is so valuable.

How is it possible to deliver always-on services while reducing cost and risk?

Anytime you try to increase service levels around availability, you usually introduce cost; for example, adding replication technologies to replace tape-based recovery solutions. What we found with these new continuous availability architectures is when we've worked with

customers merging their high availability and disaster recovery [DR] programs and spend into one continuous availability solution, they have realized a 30% to 50% savings by either eliminating or repurposing servers in their current DR solutions.

What challenges do companies face in transitioning to a continuous availability approach?

I've had the opportunity for the last year or so to travel around and meet with a lot of senior IT executives, and one of the challenges they've come back to us with is dealing with their investments in what is typically a two-site DR architecture running either cross-country or cross-continent between two data centers. They're also challenged by the amount of expertise they would need to migrate from their traditional DR architecture to one of continuous availability.

How does EMC help companies make the continuous availability transition?

Our customers are interested in receiving expertise and advice. Toward that goal, we've designed the Continuous Availability Advisory Service. At its highest level, it's really a business case that we deliver to customers to provide them with all the information they need to make a go/no-go decision about adopting this new and exciting architecture. We take a look at their current spend on high availability and DR solutions, and compare that [with] what their spend would be for a continuous availability solution. We also dive deep into their application set to determine its readiness for this new architecture. Finally, we develop a roadmap and an architectural design for their final solution. I'm excited to say that the customers we've delivered this to thus far have all been able to transition to this new architecture at a reduced cost. In one engagement, we determined that we could migrate a customer from a traditional DR approach with recovery times greater than 24 hours to a zero-data-loss, zero-recovery-time architecture while saving them \$18 million over three years. ■

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Making the CEO Happy

Boston Scientific simplifies performance metrics to track the new CEO's turnaround results **BY STEPHANIE OVERBY**

When Mike Mahoney took over as CEO of medical device maker Boston Scientific in 2012, the challenges were clear: the company was losing money and the markets for its biggest businesses were stagnant or shrinking. Mahoney slashed spending, cut jobs and made select acquisitions. But what he really thinks can save the company in the long run is information—better, more consistent information available quickly to everyone, from the executive team down to the interns.

Mahoney, who spent more than a decade at metrics-driven GE, “is a very technology-focused guy,” says Boston Scientific CIO Rich Adduci. “He understands how transformative information can be to a business.”

CIOs must step up as other senior leaders demand data, says Phil Schneidermeyer, a partner with search firm Heidrick & Struggles. “With the management team’s awareness that IT stores data which can help them grow and manage their business, the expectation rises for the CIO to provide easy-to-use, self-service tools that allow for real-time analysis.” ▶▶▶

.....**47%** Users of wearable technology, like Google Glass, who say it made them feel more intelligent. Rackspace/Center for Creative and Social Technology

►►► **Analytics** Continued from Page 13

Previously, different corporate groups at Boston Scientific developed their own metrics, resulting in more than 1,300 indicators tracked monthly. As Mahoney announced his plans, including new product lines and a focus on growth in China, India, Brazil and Russia, he wanted to align the groups, Adduci says, "so we are all talking about the same things instead of wasting time debating whose information was right."

The company began working on a new enterprise performance management (EPM) system. First, says Adduci, corporate leaders narrowed thousands of metrics down to 40, using input from various businesses, regions and functions. They decided to track not just descriptive but also predictive metrics. For example, measures like employee attrition illustrate what has already happened, but a measure of employee engagement might indicate who will stay or go in the future. (See "Invasion of the Data Scientists," Page 30.)

IT used agile development to roll out the first version of EPM, which is based on SAP's BusinessObjects and HANA database platform, starting with just 20 metrics. Now IT is doing the hard work of connecting those measures, which appear on the executive dashboard, down to the transaction level.

"As questions about performance come up, analysts will be able to quickly drill down to the specifics," says Adduci. "In the past, you'd have to send someone off to research that. This will eliminate the need for those archeological expeditions."

This requires great attention to master data management. "The more you try to link up everything, the more you find that what one person calls a sold unit or a dollar of revenue is different from the way another person defines it," he says. "Tackling that is one of our biggest challenges because the power is in getting everything to be the same." Next, IT plans to roll out a mobile version so anyone—senior leaders, clinicians, sales staff—can access the EPM system from anywhere.

Stephanie Overby is a freelance writer based in Massachusetts.

"[Our CEO] understands how transformative information can be."

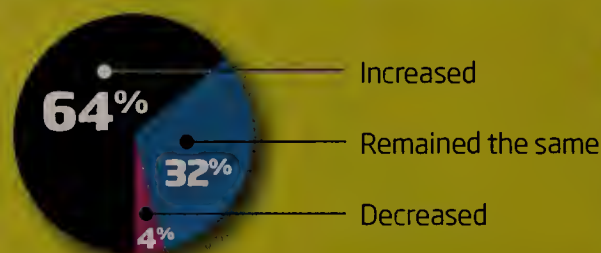
—Rich Adduci, CIO,
Boston Scientific

crunch

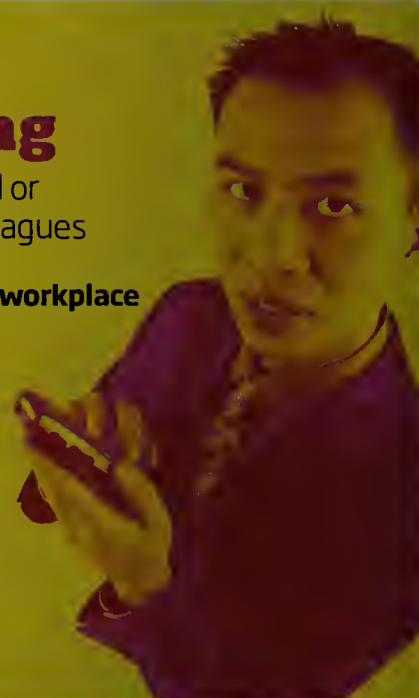
Gadgets Get **Distracting**

CIOs notice more employees checking email or surfing the Web instead of listening to colleagues

Have mobile gadgets affected the number of workplace etiquette breaches in the past three years?



SOURCE: ROBERT HALF TECHNOLOGY SURVEY OF 2,300 CIOs, MAY 2013



Future Cars Will Be Cool, Literally

Your next car may connect wirelessly to an array of cloud services, talk to your iPhone and even place your coffee order. That day is not as far off as you might think.

Internet-enabled cars were a hot topic at the MobileBeat event in July, where executives at IBM, Sprint and Ford talked up the "connected car." They predicted it will receive data feeds for weather, sports and news; send engine diagnostics to the automaker; and link to emergency services.

Moreover, car owners will be able to use an iPhone to remotely start the car and, on a hot day, turn on the car's air conditioner in advance so they get into a cooled-off car—no more suffering on hot leather seats.

Vijay Sankaran, chief technology director at Ford, says he envisions people driving up to a Starbucks window where the retailer's system recognizes the car's system, knows the owner's coffee preferences, processes the order and allows mobile payment.

And one day, Sankaran says, a car might alert the driver to changes in the stock market and allow her to make trades via a voice-recognition interface.

—Tom Kaneshige

.....**83%** Millennials who say technology, such as a smartphone or tablet, has made it easier to get a job. Telefonica/Financial Times

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Join the Social Conversation

It's time to learn how to exploit the tools of mass discussion or risk being sidelined **BY FRANK CUTITTA**

The relationship between CIOs and CMOs has been called “socially awkward,” since IT is seen as the land of slow and no and marketing staff has a reputation for being unguided missiles. This strained relationship is especially evident when it comes to social media strategy, yet that’s where cooperation between marketing and IT is most needed.

We’re at a point where technologies such as social media, big data, location-awareness and cloud-based CRM have, collectively, become what I call “weapons of mass discussion.” While I appreciate the sensitivities of using this term, I think it’s appropriate because the business world has been radically altered by the incredible power of mass-discussion technologies.

When properly deployed and integrated, social media provides the closest proxy we’ve ever had for the aggregate mind of the consumer. Companies that can listen to and influence what customers are thinking, saying and doing in real time can reap significant competitive advantages, while those who are inept at this will find themselves in an increasingly perilous defensive posture.

In many companies, mass-discussion technologies such as social CRM are now at the center of IT investment and innovation. Some pundits predict marketing’s IT expenditures will surpass those of the traditional IT department. But my research contradicts those who predict the demise of IT; it shows that demand for socially savvy IT professionals within marketing organizations is increasing. Many marketers are more dependent than ever on IT’s expertise to build a safety net for adopting marketing technology. Rather than becoming extinct, IT pros with social-media and mobile skills are simply wearing a new marketing jersey—and deriving more professional stimulation as a result.

But this will require IT departments to become more

interested in content, not just the technology containers holding that content. IT departments have been heavily involved in the deployment of internal social networks (such as Jive and Yammer), whereas the marketing department is increasingly in charge of customer-facing technologies such as social media, mobile apps and analytics.

While the reasons behind this internal-external split are entirely understandable, it isn’t such a good idea. The technologies and the staff who run them share many overlapping areas, including skills, content, tools and community memberships. For example, content that goes viral is often equally interesting inside and outside the company. Effective community managers are needed both internally and externally to launch and sustain group conversations. Moreover, many of the differences between internal and external systems break down in the real world:

Internal systems can help get the right person to the right external customer, while business-partner relationships tend to straddle both internal and external boundaries.

IT should leverage its experience with internal social networks to develop skills and build credibility so it can earn a place in the external social marketplace. Otherwise, IT departments risk being marginalized as marketing services vendors fill the gap. And marketing should pay more attention to social media usage inside the company—to see what topics catch on, and what information, services, tools and skills can be leveraged externally.

How do you get started? Revisit employee incentives to encourage greater IT staff involvement in new technologies. And CIOs must increase their own use of social media to become more familiar with the tools of mass discussion.

When properly deployed, social media provides the closest proxy we’ve ever had for the aggregate mind of the consumer.

Frank Cutitta is CEO of the Center for Global Branding and a research associate of CSC Leading Edge Forum. Follow him on Twitter: @fcutitta.

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Patriots Deploy Stadium Wi-Fi

NFL team hopes mobile bandwidth and exclusive content will lure fans from the comfy couch to chilly Gillette Stadium **BY LAUREN BROUSELL**

WI-FI Nothing can replace watching a sports game at the local stadium—except for HD TVs, warm living rooms and nearby snacks. A recent ESPN poll found that 41 percent of fans would rather watch a game at home than at a stadium.

“You have your own bathroom, the fridge is 10 feet away and the cost of a big-screen TV is less than it ever was,” says Fred Kirsch, publisher and VP of content at the New England Patriots football franchise. “Those are really hard to compete with.”

But the Patriots are hoping to do just that by rolling out free Wi-Fi at Gillette Stadium this season to give fans a more connected experience at the team’s eight home games. NFL Commissioner Roger Goodell endorsed this idea in May, saying every NFL stadium should have high-speed Wi-Fi for its fans.

The Patriots’ stadium used to rely on cellphone networks for mobile traffic, but that approach couldn’t handle the large number of photo uploads and status updates fans transmitted during games. After piloting Wi-Fi in 2012, the team and networking vendor Enterasys are rolling it out in full for the upcoming 2013-14 football season. The network will have 360 access points and enough bandwidth to handle at least 16,000 concurrent users.

Along with the Wi-Fi network, the Patriots developed a mobile app called Patriots Game Day Live, available to anyone attending a game at Gillette Stadium. The team tested a version of the app last season with fans in luxury club seats and although only 10 percent of those fans used it, Kirsch says the team hopes to see that number increase by

offering content that’s only available through the app.

“We are trying to give things here that you can’t get in your living room,” he says.

That will include live play-by-play, bathroom wait times, a tool for ordering concessions from your seat, and access to NFL RedZone, a live compilation of all the scoring plays from games around the league.

The Wi-Fi network is expected to allow 40 percent of the 70,000 fans in the stadium to connect simultaneously. Kirsch says that, down the line, the team hopes to add unique content such as audio from players wearing microphones and video from the sidelines or locker room.

Staff Writer Lauren Brousell can be reached at lbrousell@cio.com. Follow her on Twitter: [@lbrousell](https://twitter.com/lbrousell).

Retail Rivals Offer Mobile Service

RETAILERS Sainsbury’s, a major UK supermarket chain, has teamed up with mobile carrier Vodafone to launch a cellular service called Mobile by Sainsbury’s that aims to compete against Tesco Mobile, a similar service by retail archrival Tesco.

Sainsbury’s mobile service, which will piggyback on the Vodafone network, will provide its users with retail offers and shopping rewards called Nectar Points. “Mobile by Sainsbury’s feels like a natural extension of our brand as well as a great way to reward our customers,” says Luke Jensen, Sainsbury’s group development director.

In the past year, Sainsbury’s has launched online stores selling e-books and MP3s, and a video-on-demand service.

—Antony Savvas

Femtocells to Fill Cellular Gaps

INFRASTRUCTURE Cisco Systems’ recent move to acquire Ubiquisys, a maker of femtocells, reflects wireless carriers’ growing use of the small cellular base stations to fill gaps in mobile coverage and boost data speeds.

Femtocells provide a low-power signal much closer to mobile users than traditional macro networks, resulting in better voice quality, higher data performance and less drain on batteries, Ubiquisys says.

“Eventually networks should have fewer coverage holes. So when you are deep down in the basement of a convention center for a meeting, you should still have bars on your phone,” says Ovum analyst Daryl Schoolar. Initial installations will be focused on indoor spaces such as convention centers, stadiums, hotels and airports.

Schoolar predicts pilot demonstrations this year, followed by full deployments next year. —Mikael Ricknäs



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Virtualization, M.D.

One healthcare provider charts a new path with thin clients and electronic medical records **BY CAROL HILDEBRAND**

As one of the largest nonprofit outpatient healthcare providers in California, Sansum Clinic handles 650,000 patient visits per year. That's a lot of frequently changing data about prescriptions, exams, tests and billing, and until recently, a lot of it was on paper. To treat the problem, the clinic has spent more than two years putting in an electronic medical records system. The question was how best to help busy doctors, nurses and other caregivers ease into using the new system.

The politics of a project are just as important as the technology. "Nothing is more personal to a user than his PC," says Dick Csaplar, an analyst at Aberdeen Group. "A couple of loud users with executive ties can shut down a program."

Sansum chose thin-client devices running desktop virtualization software from Citrix. The devices are simple for IT to manage and in some ways look like a typical desktop computer, ▶▶

Tom Colbert, CIO of Sansum Clinic, used demonstrations tailored to doctors and nurses to secure their support for thin clients.

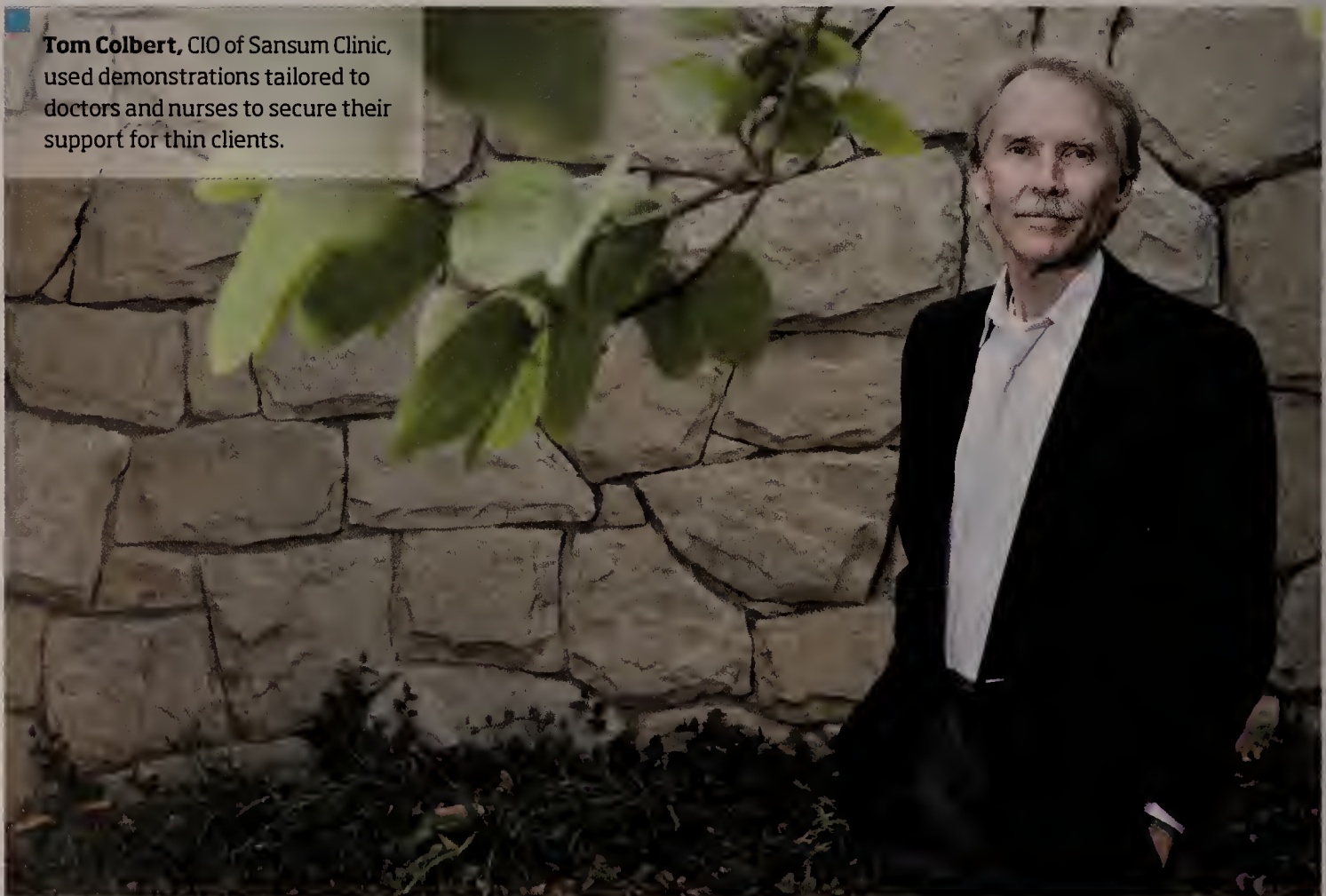


PHOTO BY DANIEL HENNESSY

WHAT HAPPENS WHEN

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says CIO Tom Colbert. "There's nothing on the device except the Citrix software," says Colbert. "You just log in and are provided with the applications that your user profile says you can access."

Each exam room has a terminal that boots up a virtual desktop, allowing medical staff to document patient visits electronically, updating centralized, real-time information. IT installed 400 new terminals in Sansum's exam rooms and replaced 600 PCs with thin clients. Csaplár says Sansum was smart to choose thin clients, which run a stripped-down but upgradable operating system, over zero-client devices, which use operating systems embedded in the firmware. The minor software upgrade requirements of thin clients are worth it to preserve the option of being able to use new software features, he says.

The project started in 2010 and was fully implemented last year. So far, Sansum has cut medical transcription costs more than 90 percent. Gone are illegible medical notes. And since all clinicians access the same patient information—such as a list of which medications a person is taking—data is now more accurate.

Virtual Success

Desktop virtualization isn't without its challenges. For example, some companies find that lower device costs are offset by increases in storage and bandwidth costs, Csaplár says. Sansum offset some expenses via the American Recovery and Reinvestment Act of 2009, a federal program that, among other things, offers financial incentives to healthcare organizations that meet certain criteria.

Going virtual, though, requires meticulous infrastructure planning, Colbert says. Sansum evaluated its bandwidth down to the circuit level, building in alternate pathways or planning local copies as backup. The organization also planned multiple test cycles to address desktop virtualization's more complex configuration requirements. "We had situations where the printing configurations on each device would disappear while we were doing our nightly refresh," he says.

Then there are the political shoals. Colbert secured user buy-in early, conducting demonstrations for staff to explain how the new devices would work. "You have to let them know very specifically what's coming, when, and who it will affect," he says.

The ultimate mark of success comes from former skeptics. "Even though many staff members hated the idea of giving up their PCs at first," he says, "a lot of them wound up liking it."

Carol Hildebrand is a freelance writer based in Massachusetts.

Things You Need to Know

GEOFENCING

1 IT CAN ENGAGE LOCAL SHOPPERS. Geofencing is a location-based service that sends messages to smartphone users who enter a defined geographic area. Some companies send promotions to customers' smartphones when they enter a store, mall or neighborhood. It's easy to get started: "All you need is an app and GPS coordinates," says Tony Costa, an analyst at Forrester Research. But he says geofencing is immature because most companies haven't integrated it with their CRM systems.

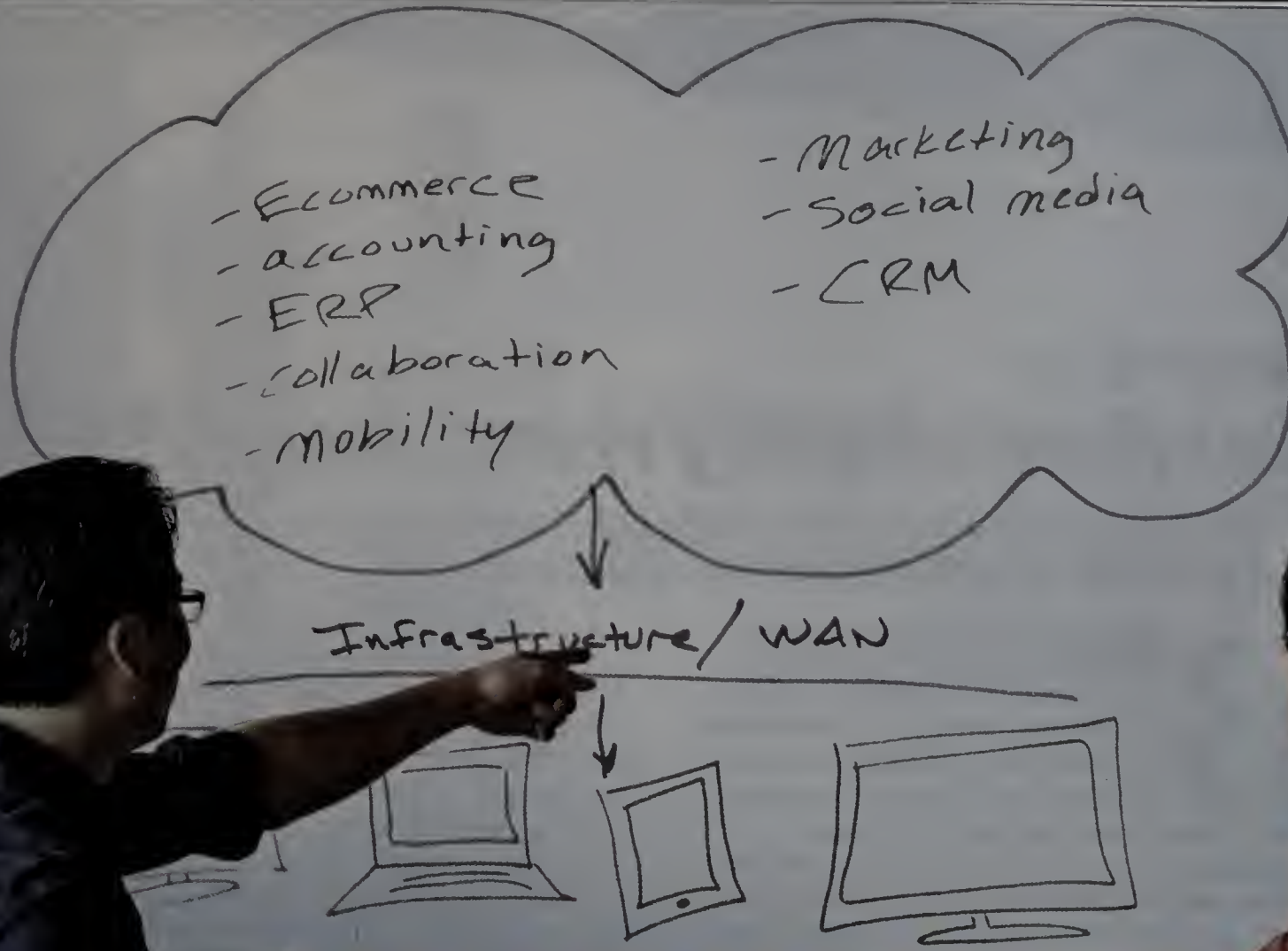
2 DEALS CAN BE HYPER-LOCAL. Knowing that customers are nearby lets businesses tailor offers based on local events or holidays. For example, 1-800-Flowers deployed targeted ads for 20 percent off bouquets in the days leading up to Valentine's Day. Their ads could pop up in any app someone was using when they entered a specified area. Amit Shah, VP of online, mobile and social at 1-800-Flowers, says the company wanted to push traffic to its retail stores. "The ad is a click-through map and opens to show your location and how to get [to the store]."

3 IT LEVERAGES YOUR LOCATION. By sending a targeted offer to a customer in a parking lot, you may be able to steer them away from competitors. Apps such as Shopkick give customers rewards, such as gift cards or coupons, for walking into participating stores. Companies can also work with businesses that offer complementary products. For example, 1-800-Flowers geofenced the area around jewelry stores that are close to their flower stores. Shah says if people are shopping for jewelry, they may want to pick up flowers as well. When a customer walks up to a jewelry store, they receive a discount offer for a bouquet from 1-800-Flowers. "Figure out what situation [customers] are in and attack that context," he says.

4 IT ADDS DEPTH TO ANALYTICS. "If you have behavioral models, location gives you another layer of understanding," Costa says. Using data analytics, companies can see whether targeted offers actually bring people into stores and result in more sales. Other metrics include how often a customer visits the store, how long they shop, and how well a window display works.

5 YOU NEED MORE REWARDS. When you know where customers are and how they behave, you can not only customize offers but also give them rewards and a personalized experience. Neiman Marcus is piloting geofencing in its stores so salespeople can see when VIP customers are in store, look at their purchase history and provide more personalized service. But Costa warns: "Make sure it's not intrusive, make sure it's additive. The value exchange has to be there."

—Lauren Brousell



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ANALYST VIEW

So What's Agility Mean, Really?

It's not just flexible systems—CIOs need to get in touch with the broader definition of business agility **BY CRAIG LE CLAIR**

Business and IT executives think about agility differently. For IT, agility is technology-focused, while non-IT leaders look for broad organization and leadership qualities that are difficult to implement. To understand agility, we need first to define what that means:

Business agility is the quality that allows an enterprise to embrace market and operational changes as a matter of routine.

An agile enterprise is change-proficient, whether that change is driven by market trends or is internal and operational. It responds quickly to both threats and opportunities, and executes change in a sustainable way. But few firms are at this level.

So where do you start? To be truly agile, enterprises must develop in 10 dimensions across three areas: market, organization and process.

- **Market agility** requires insight and execution in two areas: market responsiveness and channel integration.

- **Organizational agility** requires excellence at knowledge dissemination, change management and digital psychology.

- **Process agility** enables successful change execution. Agile enterprises widely deploy business intelligence, have infrastructure elasticity, leverage modern process methodologies and platforms, deliver software innovation faster and have more adaptable sourcing.

But not all dimensions are equal. We asked executives across many business roles which dimensions were most critical for sustaining agility. Most important: business intelligence, change management and market responsiveness. Less important: digital psychology, knowledge dissemination and sourcing. Least important: infrastructure elasticity, process architecture, channel integration and software innovation.

To help shape a company's ability to respond to strategic risk, the CIO's strategy, perspective and skills need to align with this broader definition of business agility. This will allow a more substantive conversation with the business and allow CIOs to map specific capabilities to business performance.

Craig Le Clair is a VP and principal analyst at Forrester Research.

Cyberattacks Pose a Big Risk For Exchanges

World stock markets and other financial exchanges are keenly aware that a sophisticated, large-scale cyberattack is a potential "systemic risk" that could crash the global financial system, according to a researcher at the International Organization of Securities Commissions (IOSCO).

The joint study by IOSCO and the World Federation of Exchanges includes a survey of 46 financial exchanges. The survey says 89 percent of the respondents agree that cybercrime represents a systemic

risk to the stability of financial markets. More than half (53 percent) of the exchanges reported experiencing some kind of cyberattack last year, the survey says.

In a shift away from cybercrimes for financial gain, today's attacks on the financial exchange industry tend to be disruptive in nature, usually denial-of-service attacks or malware, the study says.

So far, the cybercrimes have focused on customer-facing systems such as websites, not trading floors (which have separate systems). But the surveyed exchanges worried about large-scale attacks that could halt trading activity, shut down telecommunications networks, manipulate data, leak insider data or reduce

public confidence in the integrity of financial markets.

The report says there is "a high level of awareness of the threat across exchanges surveyed." Nearly all respondents (93 percent) report that cybercrime is generally understood and discussed by the senior management.

The exchanges reported that they can detect disruptive cyberattacks within 48 hours, but some respondents are concerned that detection times may lengthen when facing "zero day" or unknown threats.

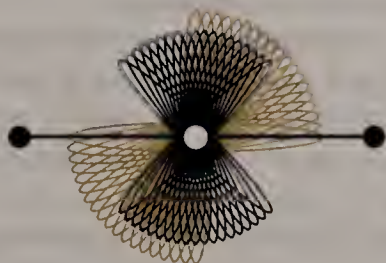
The report concludes that the industry and regulators need a broader and more robust, system-wide response to cybercrime.

—Steve Ragan and Mitch Betts



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Video Becomes Valuable

Online videos attract customers and job applicants **BY JENNIFER LONOFF SCHIFF**

Video isn't just about cute cats and dogs anymore. More organizations today are turning to on-demand video to tell their story, get the word out about a new product or service and recruit employees. Video is another form of content that CIOs need to manage, and another opportunity for internal and external business innovation. Consider these eight ways video can be used to help a company increase revenue and improve operations.

Attract new customers. "It's key to have an explanatory video on your home page if your service or product is particularly innovative or simply requires an explanation for a new customer to understand it," says Lauren Gard, marketing manager at 99designs, a graphic design marketplace. To highlight its business model, in which multiple designers compete to win a client, 99designs created a home-page video entitled "How It Works in 60 Seconds."

Announce a new product. Video is a great way to generate buzz about a new product or service, says Claudine Bianchi, chief marketing officer at Axceler, a provider of SharePoint governance tools. "The fun and cheeky tone in our videos to launch our newest product...cut through the noise of other dry product announcements," she says.

Recruit new employees. "Recruitment videos that feature company employees and promote the culture of the company can be very influential," says Melissa Thermidor, marketing manager at LatentView Analytics. LatentView's

recruitment video helped increase its applicant pool tenfold.

Educate customers. Video is a great tool for demonstrating how to use your product or service—and can often convey more information in less time than a photo or a written description, says Alex Glassey, CEO of StratPad, which makes a strategic business planning app.

"In a recent survey, our customers said they needed help understanding financial statements," Glassey says. So the company cre-

validate your business," says Lauren Hill, video production specialist at Volusion, provider of e-commerce software. Gard, of 99designs, says that "a video customer testimonial conveys so much more to prospective customers than a quote or even a case study ever can."

Share best practices. "We use both live and recorded video to create a community for our clients, bringing hundreds of Wal-Mart suppliers from across the globe together each week for the purpose of sharing best

Video is becoming another form of content that CIOs need to manage, and another opportunity for innovation.

ated a series of short videos entitled "Financial Statements Made Easy," which explain income statements, balance sheets and statements of cash flow. "We aspire to make business planning simple," Glassey says. "The videos reinforce that message and have become another funnel for attracting new customers."

Keep employees informed. Video is also a great way to share information with employees, says Carly Ramirez, social media manager at home-loan company Guaranteed Rate. "We send daily video tips to teach our employees and Realtors how to use social media, mobile apps and useful websites to grow and market their business," Ramirez says.

Let customers tell their story. "Customer testimonials in the form of video provide an easy way to help

practices," says Matt Fifer, cofounder of 8th and Walton, an education and consulting firm. "Video has been an extremely popular and effective medium for us, as our clients are typically extremely busy and prefer to catch up during what are often non-business hours."

Keep remote employees connected. Many companies already use video conferencing and webinars to stay connected, but video can also be used to strengthen company culture, says Brad Jefferson, CEO and cofounder of Animoto, an online video-creation service. For example, video can be used to inform remote employees about the opening of a new office or showcase the company's volunteer work.

Jennifer Lonoff Schiff is a frequent contributor to CIO.com.

Executive Viewpoint

Data Center Network Transformation Delivers Better Scalability



Gabe Abreu

SENIOR VICE PRESIDENT GLOBAL ENTERPRISE,
THE NPD GROUP

Abreu is responsible for aligning IT solutions with corporate objectives to ensure the IT department is well-equipped to support current and future business operations.

The NPD Group, a global market research group, provides global information and advisory services to help clients make better business decisions, track markets, understand their end consumers and drive profitable growth. Senior VP Gabe Abreu describes how HP's SDN-ready FlexNetwork architecture solutions provide greater networking bandwidth to improve access to timely data for a competitive advantage.

You recently deployed a new "green-field" data center. Describe your business and operational requirements for the network infrastructure.

As a 24x7 operation, reliable access to timely data through advanced analytics is essential for our business to remain competitive. Big Data is the backbone of our business. As client demand for real-time, complex analysis increased, we recognized the need for greater networking bandwidth and scalability to support the massive influx of information that must be consistently aggregated for clients. In the past, deriving actionable business value from data through advanced analytics was a slow process, due to bandwidth limitations of aged networks. Also, because we operate in 26 countries worldwide and provide coverage across many time zones and geographical areas, we needed to simplify standard network operating procedures.

Why did you choose HP?

After an extensive vendor selection process, we chose HP because of the promise of Software-defined Networking (SDN) and the sheer performance of its Intelligent Resilient Framework (IRF) virtualization technology. The HP Intelligent Management Center (IMC) is

a single-pane-of-glass application that enables us to manage every device from one single point of view, which we can't do on a different vendor's legacy network in our other data center.

How have HP's SDN-ready FlexNetwork solutions and services solved these issues?

To improve the performance of network switches, we are leveraging HP's Intelligent Resilient Framework (IRF) technology. IRF gives us redundancy built into the operating system for increased flexibility. We just need to configure the system once and it is then dynamically allocated. HP switches are easy to configure and link, and they scale seamlessly, which enables increased network bandwidth across NPD's data center.

Because all the devices have a unified operating system, implementation was much shorter than previous experiences with other vendors. The fact that HP helped us achieve so much in a short time speaks volumes for HP. The entire deployment process—from design and engineering to implementation—took just six months with a single-vendor solution.

We also purchased HP educational services. HP trained and certified our IT staff members to configure and support our HP FlexNetwork environment.

How would you envision deploying SDN in your infrastructure?

The security capabilities are very compelling. SDN enables us to turn switches into firewall devices. It gives us firewall functionality as packet inspection, access control, and MAC address filtering.

Just the sheer reduction of devices in the network is another key benefit. SDN can help simplify the environment so we

don't need to manage multiple hardware components. We anticipate both operational management and capital expenditure savings.

Based on the SDN-ready technology we have rolled out so far, HP's Intelligent Management Center is a great addition. We now have a single point of management across our devices and the single operating system across all of the network components. We find this very advantageous.

What impact have the improvements had on the business?

We met our business goal of bringing our new data center network online within our specified timeline of six months. There was no disruption to the business, as we achieved 100 percent uptime. We're now able to process multiple terabytes of information on a daily basis. This significantly improves the decision-making value we provide to our existing clients, as well as what we can offer to potential new clients.

Do you have advice for your peers who may be faced with this challenge?

It's extremely important to partner with a vendor and buy the entire suite of services, including professional implementation services. HP did a great job configuring, architecting, and implementing the solution, while giving us choice, flexibility and scalability across our data center.

FOR MORE INFORMATION:
visit www.hp.com/networking



Cloud to the Rescue

After an acquisition, a thriving business suddenly finds itself in need of a new IT operation **BY MARY K. PRATT**

Charlie Billings faced a daunting task: Create an entire IT operation for a company already in full swing.

The company is Lincoln Trust, a provider of 401(k) services, where Billings is vice president of IT and CTO. The company had spent four years achieving high efficiency, with a business operations strategy that relied on enterprise-level workflow technology. The technology—off-the-shelf software that had been customized and run in a private cloud—was so successful that it was the main reason PENSICO Trust bought Lincoln Trust, Billings says. The sale, completed in March of 2012, transferred about 75 percent of Lincoln Trust, along with the technology, to PENSICO. That left Lincoln Trust with the 401(k) business line, about half its 200 employees, and a pressing need for a new technology platform.

Given the circumstances, Billings says cloud was the way to go. He fig-

ured cloud-based offerings would let him set up a new platform quickly without costing the millions he'd need if he were to build it on-premise.

That was feasible, Billings says, because he already had good insight into Lincoln Trust's processes. His enterprise-level workflow process is based on the idea that there are just four states of work: new work coming in, work being assigned, work being processed and sent to quality control, and, finally, work routed to history.

Gartner analyst Michele Cantara says Lincoln Trust could make cloud work, and work so quickly, because it already had insight into its workflow and business process management. "They were already using a BPM platform, so their processes were visible," Cantara says.

One key to the new setup is cloud vendor SpringCM, which provides content-management services that workers can use anywhere via browser.

Billings estimates that the cloud solutions cut his IT budget by about 75 percent. (He includes reductions in upfront costs, labor and ongoing maintenance costs.)

In addition, Billings says the simpler infrastructure keeps headcount down. He now has two developers, a security expert, and an outside vendor for operations and tech support.

But Billings says cloud isn't without challenges. For one, he has to live with limited control; vendors, not his own staff, must troubleshoot problems. And he says the cloud vendors' use of standardized contracts was at times troublesome.

Still, Billings says cloud has delivered. "We had a sophisticated business, and it's a pretty fast-moving business, and we're able to do this with the cloud," he says.

Mary K. Pratt is a freelance writer based in Massachusetts.

CIOs Worry About the 'False Flexibility' of the Cloud

Despite the promise of portability from service providers, the reality of the cloud for big customers is that it entails a type of lock-in similar to that of on-premise apps like those from Oracle and SAP, two CIOs said at the GigaOm Structure conference in June.

"You're kind of locked in—it's out with the old boss and in with the new," said Ralph Loura, CIO of The Clorox Company. Companies that buy storage and compute services in small increments might not be tied to one provider, but most big companies sign big, multiyear contracts with cloud suppliers that effectively tie them to one platform, he said.

There's a "false flexibility that lives in the cloud," Loura said.

Just as companies are locked in to platforms such as SAP and Oracle in their data centers, "we're probably just transferring that to different cloud vendors at the moment," said Ben Haines, then-CIO of Pabst Brewing (he has since joined cloud-storage company Box), who was on stage with Loura. "There's this move toward

open platforms, but they're not there yet," Haines said.

Still, Clorox and Pabst are putting some apps in the cloud, which can help companies keep costs down because they don't have to buy or manage new servers. Clorox runs its collaboration, communication and internal Web environment on Microsoft's cloud services, Loura said. Pabst is running similar apps on Google services, though it does so through a Google partner because the Internet giant is too hard to communicate with directly, Haines said.

"My impression from an enterprise standpoint is that [Google is] talking the talk, but they're not backing it up yet," he said. "In the enterprise, you need someone to call."

The cloud is becoming the new "legacy" environment, Loura said, a term normally used for older on-premise systems. "A legacy platform is anything currently live in the environment, so most of our legacy code today is sitting in the cloud," he said.

—James Niccolai

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Invasion of the Data Scientists

30

Leading HR departments are turning to **'talent analytics'** for a wide range of staffing issues. CIOs are at the center of this data-driven transformation

BY STEPHANIE OVERBY

When General Motors was looking for someone to lead its global talent

and organizational capability group, the \$152 billion carmaker clearly wasn't looking for a paper-pushing administrator. Michael Arena, who took the position 18 months ago, is an engineer by training. He was a visiting scientist at MIT Media Lab. He's a Six Sigma black belt. He's got a Ph.D.

This is not your father's human resources executive.

But it is a sign of where the corporate HR function is headed. Arena is dedicated to the hot field of talent analytics—crunching data about employees to get “the right people with the right talent in the right place at the right time at the right cost,” he says.

“Talent management is a soft space. Historically, we haven't been able to measure definitely the things that we intuitively believe to be true,” says Arena. “But businesses are mandating it.” The age of “trust me, this will work” is over, says Arena. “HR is being held accountable to deliver business results. And the language of the business is analytics.”

The growing importance of sophisticated analytics to HR—not simply reporting what already exists in an organization but predicting what could or should be—is a result of “the recognition that the efficient use of labor and deployment of resources is critically important to the business results of the company,” says Mark Endry,

PHOTO BY JEFFREY SAUGER AND GENERAL MOTORS



Michael Arena (left), director of global talent and organizational capability at General Motors, depends on **Bill Houghton**, CIO for global corporate functions, to provide the integrated systems required for HR analytics.

CIO of Arcadis U.S. He recently spent six months as interim senior vice president of HR at the \$3.3 billion company.

In recent years, enterprises have developed more mature techniques for applying analytics to customer information. "They've been able to see—with relatively little data—how much they can do and how powerful the results can be," says Ben Waber, author of *People Analytics: How Social Sensing Technology Will Transform Business and What It Tells Us about the Future of Work*. "When you think about what's going on within companies, you have potentially billions of records generated every day about each person. They're starting to see how valuable and important that data is."

IT must be at the center of the unfolding data-driven transformation. Not everyone has an HR data scientist like GM. Arena emphasizes the importance of his partnership with Bill Houghton, GM's CIO for global corporate functions. "A big piece is integration—ensuring the right systems are connected so we know where to draw the data from," says Arena. "IT has to play a role in that."

Indeed, GM's CIO is counting on a new enterprise data warehouse—and hiring more IT professionals with a business intelligence background—to support HR's efforts. "Right now the analysis is being done by small group of smart people," says CIO Houghton. "The next step is how do we make the analytics more available to the everyday manager or the organizational leadership. We want to get this out of the hands of the rocket scientists and into the hands of managers."

CIOs are the key to helping the organization figure out what data matters, says Terry Sullivan, director of applied research and consulting at office furniture maker Steelcase. "Everyone is thinking about big data and collecting all kinds of data to try to figure out how to create smarter people. CIOs can drive this effort."

IT leaders are uniquely qualified to help their corporate counterparts navigate the minefield of issues associated with these nascent technologies and processes—including data quality, systems integration, security, privacy and change management. "The partnership with IT is critical," says David Crumley, vice president of global HR information systems for Coca-Cola Enterprises.



Talent Analytics 101

IT and HR leaders who are deploying workforce analytics systems identify nine critical success factors

LAY THE FOUNDATION Aim for a single source of HR information, if possible.

ACCOUNT FOR IMPERFECTIONS "We've got our foundational issues, for sure, but if you wait until it's completely perfect, you won't get anywhere," says Michael Arena, GM's director of global talent and organizational capability. IT can build reconciliation processes and automated audits to help HR with data issues.

START SMALL Marc Franciosa, CIO of Praxair, began with an analytics pilot to map the company's high-potential employees. "If we had tried to do one big-bang workforce analytics project, it would never have gone anywhere," he says. "You have to get some traction in order to get credibility."

TAP INTERNAL EXPERTS Both Franciosa and Arena have taken advantage of statisticians and others from their corporate R&D groups to develop their talent analytics programs.

SHARE THE LOAD WITH HR Take advantage of HR and IT's complementary skills. IT can focus on vendor management, security and deployment, while HR might manage requirements gathering, process standardization and communication.

BRING IN BUSINESS KNOW-HOW David Crumley, VP of global HR information systems for Coca-Cola Enterprises, works with business leaders from functions such as supply chain, sales and finance to determine what data will drive talent analytics.

HIRE EXTERNAL CHANGE-MANAGEMENT HELP Typically, HR leads change management in an organization. But avoid DIY change management in analytics efforts, warns Mark Endry, CIO of Arcadis U.S., who recently spent six months as interim SVP of HR. Hire external help to guide HR through its big changes.

TAKE ACTION "Everyone wants to have more data, but we have to ensure that folks know how to use it," says Crumley, who had to do more hand-holding than he initially anticipated. "It's not that anyone is pushing back, but you have to embed the use of the data into the [corporate] DNA."

DEMOCRATIZE THE SYSTEMS For people analytics to truly deliver, they need to be self-service tools that business managers and leaders can use. "Early on, we thought the customer [for these tools] was HR," says Crumley. "But it's the business leaders that control these decisions daily."

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Chiquita CIO **Kevin Ledford** is exploring predictive analytics to help the company find, train and retain its “bananaeros”—experts in growing bananas.

There's a broad array of uses for talent analytics: screening new hires, figuring out who should get promoted, efficiently staffing new projects, uncovering the characteristics of high-performing individuals

or teams, and even predicting who's likely to head out the door.

“The way I think about it is using data to understand how people get work done,” says Waber, CEO of Sociometric Solutions, a management-services firm that was built on his work at MIT Media Lab and that helps companies in one niche of the talent analytics field: collecting and analyzing sensor data to improve workforce performance.

Companies have collected employee data for years—from satisfaction surveys to ethnography. But, says Waber, this “next generation of stuff is moving away from those qualitative assessment modes into much harder behavioral modes, using digital data from email or sensors or ERP systems. That gives us radically more powerful information.”

Historically, HR used data to report headcount or turnover information. “We're so far beyond that now,” says Crumley of

Coca-Cola Enterprises. “HR wants to expand its capabilities to help the business grow. To do so, we need to be able to be more precise and surgical about our interventions. That's where workforce analytics is huge—helping you determine where to place your bets.”

Laying the Foundation

Employees generate petabytes of data about themselves every day, says Waber. But that data sits in disparate systems in different formats and is often messy. “To make it work, you need access to all of this information in real time,” Waber says. “IT is the backbone for this entire process.”

Implementing a single version of an HR information system itself may not sound revolutionary, but it's a critical first step for companies interested in more advanced analytics.

Jo Stoner, senior vice president of worldwide HR for Informatica, knew predictive talent analytics could benefit the growing data-integration company. “A lot of companies don't make it past a billion [in revenue]. We were starting to hit those awkward teenage years,” she explains. Managing the compa-

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ny's assets would be critical to maintaining momentum. But "we don't own buildings or raw materials," says Stoner. "Our greatest asset is our talent." First, though, the company had to bring all its HR data together, applying the master data management services Informatica delivers to clients to its own internal employee data in order to layer analytics atop it.

For most companies, just arriving at a single version of the HR truth can be beneficial. Paul Lones, senior vice president of IT at Fairchild Semiconductor, says that two years ago, managers at the chip maker lacked a single system that could provide an accurate tally of employees worldwide, let alone show the amount of employee turnover. Reports had to be compiled from multiple systems. Succession planning took place in Microsoft Word documents. Compensation decisions might be made in isolation. Now that the company has implemented cloud-based Workday, managers can access data on all 9,000 employees in one place, including succession plans, turnover trends and salary information. "A manager in the Philippines considering a raise and promotion for an employee can see in seconds how that will compare with others in the group and with local compensation trends and make that decision," says Lones.

It may not be rocket science, but it's a start—one that's been a long time coming for many HR groups. Chiquita Brands, for example, had multiple homegrown and manual HR systems. "It was a cobbled-together thing," says Kevin Ledford, Chiquita's CIO. "People spent 90 percent of their time figuring out where the data was and 10 percent on analyzing it." In 2008, the company moved to a global HR system, which came in handy when Chiquita moved its headquarters from Cincinnati, Ohio,

buildings, to staff client projects more efficiently and effectively. "In the past we couldn't tell who was mobile," says Endry. "Now when we have a giant project in Ohio, we can see on a dashboard that we've got these three people in Boston willing to move there."

Marc Franciosa, CIO of Praxair, has tied the company's HR and employee performance systems to non-HR systems like SharePoint as a foundation for the company's talent analytics initiative—no small task for the \$11 billion industrial and medical gases company with 26,000 employees in 50 countries. "The underlying data and processes have to be consistent to be able to do any real analytics with confidence," says Franciosa. "For companies that are fairly mature that haven't had a global environment before, it's going through that initial normalization and standardization process to make sure that this certification, for example, means the same thing around the world," says Franciosa. (He implemented SumTotal's HR management system and ElixHR platform to link disparate data.) "The cleanup has been a challenge."

Now, when Praxair wants to make a bid or sign a new customer, managers can analyze HR implications first. Do they have people who speak Portuguese, have the necessary certification, and are willing to relocate to Rio de Janeiro? "We can do some modeling of the skill sets to determine if it's doable or if we will have to recruit externally," Franciosa says.

At GM, Arena has been implementing a three-phase analytics plan. First, integrate systems in a way that ensures highly accurate data is available. Next, push much of that data into standardized reporting tools and dashboards that business managers can use on their own. Then start building models.

One of the first projects Arena implemented was a means-based comparison analysis of the top talent pool. The model examines every employee data field in the PeopleSoft database to look for important insights, Arena says. "Five or six experiences may jump out. Having international experience may statistically matter. Then we dig deeper. Are there certain types of international experiences that matter more than others? Does that need to happen earlier versus later?"

Divining Interventions

The real power is in applying predictive analytics to a corporate population.

"Everyone's talking about it," says Chiquita's Ledford, "looking at all this data you have and trying to figure out the future."

"The typical data warehouse approach is looking back, but what we wanted to do was start looking forward," says Praxair's Franciosa. "What are the leading indicators we should be looking for? What are those metrics or data sets we don't have but, if we did, would really help us? What external data sources could we use to drive better decision-making?"

For example, Praxair is growing by double digits in China. "Rather than hiring a ton of people and trying to recreate the wheel [there], what I've been driving is how do we replicate rapidly those things that have made us successful in our



"HR is being held accountable to deliver business results. And the language of the business is analytics."

—Michael Arena, Director of Global Talent and Organizational Capability, General Motors

to Charlotte, N.C., and lost 75 percent of its corporate employees. "It was very tumultuous. We threw all of our monkeys in the air, and they all came down in different buckets," says Ledford. "It would have been a nightmare [without the global HR system]." Now that the company is exploring predictive HR analytics, that success with master data management "is everything," says Ledford.

At Arcadis, Endry has connected his cloud-based workforce-management system to 11 other pieces of software, including ERP, learning management, payroll and an active directory. The combined data helps the company, which provides engineering services regarding infrastructure, water, environment and

mature geographies," says Franciosa. "There's a huge opportunity to use predictive analytics based on where we're best-in-class."

The predictive analytics market for HR is nascent and wide-open. "We partner with them all, from IBM to SuccessFactors to PeopleSoft," says GM's Arena. "They're all trying to play in the space, but I don't know that any of them have figured it out."

Arena's team has built a model that predicts what changes in attrition rates will mean for GM's workforce. Previously, if someone proposed hiring a bunch of young engineers, no one could be certain if that was the best decision. "Now we can say, let's see what that looks like five years from now," Arena says. "What are the dividends if we hire 200 entry-level engineers? Might we be better off hiring 50 advanced engineers? We can take that information to the head of engineering and say, 'Here's what it will cost you.'"

Arena thinks that analyzing the interactions of networks of employees holds the most promise. The process starts with a survey. "We ask questions of a given network: Who do you go to when you want to shop a new idea? Where do you turn when you need resources to get things done? Then we run the analytics," Arena explains. "We can tell you who the brokers are, who's central in that network, who are the bridges across silos. We can even predict who's a flight risk based on where they sit in the network." And by identifying which employee networks are most productive, Arena says there's a chance to improve performance across the company.

At Coca-Cola Enterprises, Crumley is integrating business data with HR data for predictive purposes. "That's where you can really get sexy with it," he says. While working with IT to clean and standardize all the data, Crumley is partnering with each corporate function to find out what business metric might be the key measure of success for their employees. By combining those business metrics with people data, he hopes to be able to "reverse engineer what a successful employee is, so we can get the best candidates in the future."

Employee engagement is a leading indicator of talent retention at Coca-Cola Enterprises. And one of the biggest boosters of employee engagement numbers is access to on-the-job learning, so Crumley's team is trying to figure out how to make training opportunities more universal. For example, why are folks in this shift at this plant not taking classes as much as other employees in that line of business? With answers to questions like that, HR can intervene to address the core reason, whether that's an accessibility problem or a manager who needs more coaching. Crumley says the effort will gain even more steam when HR is able to show, through data analytics, a correlation between taking a specific training course and an improvement in sales or productivity.

At call-center provider NOVO 1, CTO Mitchell Swindell has implemented a predictive hiring tool from Evolv. Applicants



"What's really happening right now is a shift in HR from an art to a science."

—David Crumley, Vice President of Global Human Resources, Coca-Cola Enterprises

complete a Web-based application that screens for attitude, propensity for customer service, and voice capabilities. The software also shows the candidate what it's like to work in a call center in hopes of screening out those who would be a poor fit in the high-turnover industry. The tool then gives the candidate a red, yellow or green rating, at which point candidates rated green or yellow are invited for in-person interviews. The hiring decision is still in the hands of a human, but the system has predicted with 80 percent accuracy the company's top performers, based on 90-day follow-up data on the hired employees. Since introducing the algorithm-enhanced hiring system, tenure is up by 25 percent, agent productivity has increased 30 percent, and the overall staffing budget has decreased 11 percent. Swindell has integrated Evolv with the company's payroll, workforce-management and proprietary quality systems to help develop a more nuanced profile of the best employees.

At Chiquita, Ledford is exploring predictive analytics to help the company find, train and retain its "bananaeros"—experts in growing bananas. "Those guys are really hard to find, as bananas have taken a backseat to coffee and tourism," says Ledford. Analytics could enable managers to predict which lower-level employees "could become our next wave of banana folks," says Ledford, and determine the right training and grooming to make that happen.

Employee Tracking

There's also a gold mine of information in how people move through an organization, and a handful of companies are looking at physically tracking employees—often via RFID-enabled badges—to find out how people work and what impact that can have on business outcomes.

"The barrier at this point is not the technology," says Waber, whose Sociometric Solutions is an early provider of sensor-based analysis. "I can tell you how much more money a company makes when two employees eat lunch together. We can do extremely sophisticated things. The challenge is that organizations are not used to looking at themselves this way."

When GM's Arena was senior vice president of leadership development at Bank of America in 2010, the financial services company used sensors to track 90 call-center workers over the course of several weeks and found that those in the most cohesive networks were the most productive. By switching

from solo to group break times, encouraging more socialization, agents improved efficiency by 10 percent. “As silly as it sounds, it worked,” says Arena. “The analytics told us it was probably the right thing to do.” Sometimes it’s as simple as moving desks closer together, says Waber. Steelcase’s Sullivan has discovered that the size of lunch tables can have an impact on productivity. You can’t force people to interact more, says Waber, but based on the data, you can “engineer serendipity.”

Although Arena conducted a number of experiments using sensor data at BofA, he’s not quite ready to start tracking workers at GM. “I’m a huge advocate of sensor work,” Arena says. “But it’s laden with trust and privacy issues and a lot of organizations just aren’t ready for that. It can be a bit of a slippery slope.”

Praxair is conducting a pilot using sensors on its remote workers. The system will measure how long it takes a worker to, say, install a tank for a customer, by monitoring their movements via a sensor on their protective equipment. The sensor also monitors workers for exposure to harmful gases. If gas is detected, an alarm goes off and the monitoring center will attempt to communicate with the worker. Franciosa envisions integrating the sensor data into other corporate systems to uncover correlations between events and particular locations, types of employees, or certifications.

The Importance of Transparency

Franciosa expects employees to put up some resistance to being physically tracked, much like the pushback the company encountered when it was first placing computers onboard its trucks. “It was viewed as Big Brother wanting to know how

those who have signed up, but also to everyone on the campus.

“In the U.S., employees don’t really legally have protections around this data. A company can track you wherever you go and listen to all your conversations,” says Waber. “But that defeats the purpose of this approach, which is trying to help people work better, be happier and stay at their jobs.”

Communication is critical with any collection and analysis of people data—not just sensor data. “I don’t think we’re doing anything that people haven’t been trying to do for years,” says Informatica’s Stoner. “But we have to say what we will do with that data.”

Praxair’s Franciosa has a close partnership with his legal teams around the world to navigate the various data privacy and protection issues in each country. “But even once we understand that we can have this data, we have to be very transparent and say, here’s why we want your picture or your talent profile,” Franciosa says. “That goes a long way toward gaining both credibility and traction.”

The Role of Data in the People Business

“What’s really happening right now is a shift in HR from an art to a science,” says Crumley of Coca-Cola Enterprises, who’s currently exploring how social network data and gamification might become part of his HR analytics platform. “A lot of HR teams are trying to figure out how to make that shift quickly so it’s no longer HR sitting around waiting to be pulled in, but HR coming to the table with nuggets of wisdom.”

Data analytics could enable HR to elevate itself from a tactical support function to a business partner on strategy, which ought to sound pretty familiar to CIOs.

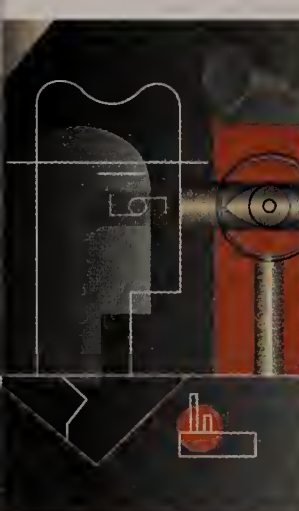
But there are limits to HR’s data-driven transformation. “[Analytics] are all about probability, and there’s just so far you can go with probability,” says Crumley. “If you want to figure out how many employees you need to launch a new product, it can get you in the right ballpark. When it comes to predicting turnover, it’s not an exact science. People are people.”

“It’s never black-and-white when you’re talking about people,” says Stoner of Informatica. While some folks get stars in their eyes when talking about big data, Stoner often sees a bigger haystack to sift through. But analytics, she says, help

point companies in the right direction. “In HR, we live in a world where data brings more questions. You always have to look beneath it,” she says. “It’s not an exact science. But at least it gets us looking at the right part of the haystack so we can get to the answer faster.”

That’s why GM’s Arena says his talent analytics will never be fully automated. “Sometimes we get projections wrong for all kinds of reasons. It can take several iterations. But HR still loves it, because it equips them to make intelligent decisions for their business partners.” **CIO**

Stephanie Overby is a freelance writer based in Massachusetts.



“The typical data warehouse approach is looking back, but what we wanted to do was start looking forward.”

—Marc Franciosa, CIO, Praxair

fast I drive or how hard I brake,” says Franciosa. “The way to alleviate that is transparency. People won’t like being physically monitored if they think we’re trying to find out how long their break was. So we have to be completely transparent that we are using this for safety and long-term productivity. They’ll recognize the value in that.”

HR collects all kinds of sensitive employee information, but employees see physical tracking as particularly intrusive. “It is the boundary to cross,” says Steelcase’s Sullivan. All of Steelcase’s sensor-related experiments are opt-in. Company analysts see only aggregate data, not individual histories. And Sullivan’s team communicates the process and the intentions not just to

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We partner closely with the business on technology projects, like our new mobile sales platform or our CRM system, which has the tagline "created by the people who know our customers best"—that is, the business, enabled by IT.

It's important that our entire IT team gets it. When you're managing a server farm or storage or a cloud solution, you can lose sight of the fact that when something goes down, a patient might not get the information on that oncology drug they need to stay alive. It's motivating for IT professionals to understand how they affect that. We may seem removed from the customer, but we're not.

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Risk mitigation and compliance are the hardest to quantify. We must distinguish between the need-to-have and the nice-to-have. We can't just say we need to invest in something because the risk is high. What does that mean? Will we lose money? How much? Will we lose customers? How many? We take advantage of our in-house actuarial and risk-modeling expertise to quantify risk.

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Social in the Driver's Seat

For Toyota's CIO, opportunities for mining social data are endless

BY ZACK HICKS

We began testing social media monitoring and sentiment-analysis tools about two years ago, when the buzzword was really taking off. At our annual innovation fair, a couple of our data analysts submitted a prototype using public data collected from Facebook and Twitter. By filtering to find words like "Lexus," "decide," "buy" and "BMW," they could quickly identify active shoppers who were choosing between ours and another brand. We gave them more funding and bandwidth, and it ultimately evolved into our award-winning sentiment-analysis system.

Today, we use social media data analysis across many areas—sales, service, quality, marketing and product development. For example, if a customer expresses interest in a car, we can determine engagement by analyzing the frequency of dealership visits via their Foursquare check-ins, understand their dealership experiences, and even understand what features may have sparked their interest in a competitor's product. This allows us to stratify leads based on their readiness to buy, moving stronger leads to the top of the list and bumping down someone who turns out to be a 12-year-old configuring a Lexus at home.

By analyzing free-form text, we learn what customers think of specific vehicles, like the new Avalon. In the quality area, we can look for information like whether new-car owners are hearing a slight rattle and pass that on to our quality engineers. We're also working on using sentiment analysis to increase the accuracy of our sales predictions. If people are saying positive things about the Camry in Boston, how does that correlate with how many actually sell? By feeding sentiment analysis and predictive analytics into our incentive-modeling tool, we hope to make more informed decisions about how to spend incentive dollars.

We also want to deepen our understanding of customers' other interests, like what are Camry owners' favorite TV shows, and what other brands do they like? This would help us be more effective in ad placements and brand tie-ins.



A key difference with our tool is that we can correlate our social media results with our own internal data to look for new insights, like what a wide cross-section of people think of the Camry versus what new Camry owners think. Or if we see a customer expressing concern about an experience with a dealership, we can work with the dealer to offer assistance.

We're very careful, though, not to cross the line when it comes to privacy. For someone deciding between Lexus and BMW, for instance, we could send discount coupons instead of inserting ourselves into the conversation.

It's been interesting to see the dialogue between IT and the business mature. It's a great example of IT not waiting to take orders but proactively coming up with strategies that grow the business through innovative use of technology. That really requires an understanding of the culture, where the issues are, and what gaps need to be filled.

Zack Hicks is CIO at Toyota operations in North America and group vice president for Toyota Motor Sales U.S.A.

VIEWPOINT



Anthony Christie

CHIEF MARKETING OFFICER
LEVEL 3 COMMUNICATIONS

Anthony Christie is Chief Marketing Officer for Level 3 Communications, responsible for worldwide Marketing and Product Management. He oversees the direction of segment and go-to-market strategy, product strategy, strategic pricing, product management, corporate marketing, competitive intelligence and coordination of the regional marketing organizations.

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Network infrastructures must rise to the challenge as performance demands grow, users go mobile, and applications continue to move to the cloud.

Growth is desirable for companies of all sizes, but the challenges that come with it are not. Few growing pains are sharper than those associated with IT—networks in particular. Anthony Christie, CMO of Level 3 Communications, tells us how company facilitates growth by helping clients run their networks more efficiently in an inherently secure fashion.

As businesses move more apps and data to the cloud, what should they be asking their network providers?

For starters, they should be asking about security of the network and their data, as it moves literally through the fiber in the earth, through each device in the network, to the cloud. Beyond that, it's transparency—will they be able to see how their applications will be supported and what will happen in the event of an outage? Can they tour the facility where their applications will reside? It's important to understand the physical route of how your users will be accessing the applications residing in the cloud—will you have better reliability and availability than you do when the application is in your own data center? Finally, they need to look at the performance enhancements and customization they've made to an application, especially if they've been using it for a few years. Make sure your cloud provider knows about the modifications you've made to your applications and is prepared to provide those exact levels of service.

What's important to understand about Level 3's approach to network security?

In addition to the extensive work we've done to protect our own network, our position as a leading, global IP services company with a global content delivery network (CDN) and a large DNS footprint

gives us a superior view of network activity. That allows us to use our enterprise security capabilities to proactively protect our customers. We have harnessed what we understand about the threat landscape to create a fully managed security offering that includes intrusion prevention, intrusion detection, managed firewall systems, and event correlations across our, and our customers', network. And because we have a large bank of historical data, we know what's "normal," so when things happen that are out of the norm, we can quickly identify the issue.

How are you able to help customers with application performance?

First, on the solutions side we need to know the business goals of the client so that we can tailor the solution we are providing to support these goals. When we understand our clients' priorities, both locally and globally, for the different classes of service some applications require, we can engineer the solution to be application specific. On the product side, our CDN has front-end TCP optimization capability, and we have performance management tools that reside in the VPN, so clients can monitor their applications in real time and make adjustments to their bandwidth when necessary.

Network provider customer service is a must. Tell us how you address it.

It starts with culture, meaning that we're a flat organization that espouses a customer-first mentality. But it quickly gets very methodical, with an extensive research program that measures customer satisfaction and loyalty several times a year by looking at sales experience, service delivery, service management, and billing. Once we've established baseline performance with a customer, we develop specific improvement initiatives based on that feedback. ■

A Laser Focus on Customers

For Carlos Cardoso, CEO of Kennametal, customer data is key

BY MARTHA HELLER

How are you using customer data for business benefit at Kennametal?

We have 80,000 active customers in 60 different countries, and we serve nearly 5,000 customers a day. Our access to customer data gives us insight into how efficiently our customers are running their manufacturing plants. We can see which of

First, I encourage CEOs to have their CIOs report directly to them. That sends a message that IT is a mission-critical part of the strategy.

Second, I advise CEOs to fix their processes before implementing an ERP system. Before we started our ERP implementation, I didn't even want to talk about IT—I wanted to understand and define our com-

should you think about how best to automate. The IT solution comes last.

One of your goals is to realize 40 percent of annual sales from new products. How do you sustain that kind of innovation?

Number one for a CEO is to make clear that innovation is a critical competitive process. Commercial success starts with an acute focus on the customer. We offer people financial incentives for achieving 40 percent of annual sales from new products. In fact, we've achieved that goal for the last decade, except for one year during the recession, when we reached 39 percent. Part of being innovative is keeping the focus on new products, even in a downturn.

In your blog, you talk about an engineering talent crisis in this country. Can you elaborate?

We are graduating fewer engineers in this country than ever while China and India are developing more, so we have to go outside the U.S. to find the talent we need. Industry leaders need to engage local high schools and let faculty and students know that we have plenty of high-tech opportunities in manufacturing, but not enough skilled talent. We have to work with high schools so they teach the skills we need and then reward them with good jobs for their graduates.

Martha Heller is president of executive recruiting firm Heller Search Associates and author of *The CIO Paradox*. Follow her on Twitter: @marthaheller.



Part of being innovative is keeping the focus on new products, even in a downturn.

their locations are the most productive and which are not.

Many large manufacturers don't know how much they spend on tooling in their plants, let alone if they are running optimally. If we can show them that one location is 20 percent more efficient than another, we can also show them how applying the same best practices at all locations saves them money, effectively increasing capacity and production within the same footprint. Imagine the power of that conversation.

You have credited a successful ERP implementation for your ability to leverage data as a competitive advantage. Do you have any advice for other CEOs?

pany's critical processes. We found that we had over 6,000 processes. Then we asked: How many processes should we have? The answer was 600.

Using Lean and Six Sigma tools, we streamlined our processes against the standard SAP package. My philosophy is that more than 100,000 companies use SAP; our processes should not be so unique that we can't make standard SAP work. Our goal was to standardize 90 percent of our processes, and we came in at 92 percent.

Start with asking how you deliver value to your customer and work backwards to connect the right processes in the right sequence across the supply chain. Only after that

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Dollars and Sensors

During the three to four weeks it takes to make paper money, sensors on machines at the Bureau of Engraving and Printing (BEP) ensure that watermarks, serial numbers, special colors and textures are produced accurately on each bill. BEP used to track this multi-step manufacturing activity with paper and a 25-year-old mainframe, a process that was outdated and far from precise, says Peter Johnson, former CIO at BEP. "People were running around with clipboards and they weren't capturing the true raw data," he says. Now sensors on the 50 printing presses in BEP's two plants in Washington, D.C., and Fort Worth, Texas, provide 35,000 data points in real time on aspects of the process such as quality, temperature and paper and ink levels. Employees receive alerts about problems, allowing them to reduce manufacturing errors and fix problems faster, he says. With the old system, he says, "if something went wrong, it wouldn't be found until it got to the next step a week later."

—Lauren Brousell

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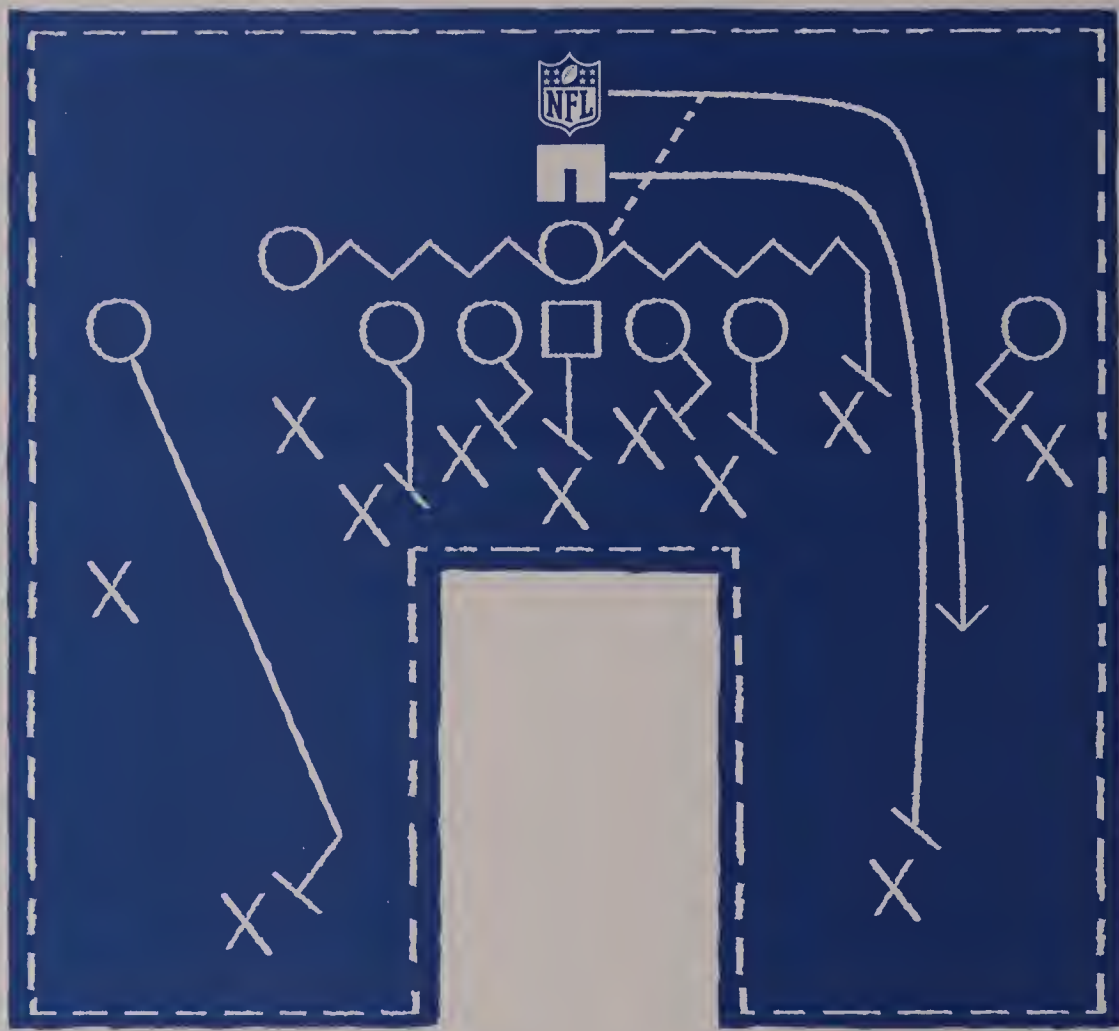
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